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CFP001

CONTRACT DOCUMENTS
For the Installation of Monitoring
Wells at the ECC Site
Zionsville, Indiana

CONSISTING OF:
BIDDING REQUIREMENTS
CONTRACT FORMS
SPECIFICATIONS
DRAWINGS

CH2M HILL CENTRAL, INC.
Milwaukee, Wisconsin
April 1983

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Project No. W65230.C3

Copy No.15....

RFB 5-003

LIST OF BIDDERS FOR INSTALLATION OF MONITORING WELLS
AT THE ECC SITE

Mr. G. M. Rana
R&R International, Inc.
1574 Akron-Peninsula Rd.
Akron, Ohio 44313

Mr. Theodore Dzi^vzman *

Soil and Materials Engineers, Inc.
34400 Glendale Ave.
Livonia, Michigan 48150

Joyce Elliott
Materials Testing Consultants, Inc.
693 Plymouth Ave., N.E.
Grand Rapids, MI 49505

S. B. Sehgal
Geotechnical & Materials Consultants, Inc.
1341 Goldsmith
Plymouth, MI 48170

Gustave Koditek
D & G Drilling Inc.
1037 Vine Street
New Lenox, Illinois 60451

Mr. Eric Lomax
ATEC Associates, Inc.
5150 East 65th Street
Indianapolis, Indiana 46220

Mr. John Brewer
Soil & Material Engineers, Inc.
3109 Spring Forest Rd.
Box 58069
Raleigh, NC 27658-8069

Mr. Virgil W. Stearns
Stearns Drilling Company
Industrial Park Drive
Dutton, Michigan 49511

MR. DREGLER
BOWSER - MURPHY Co
P.O. Box 51
DAYTON, OH

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PART 1
BIDDING REQUIREMENTS

INVITATION TO BID

Sealed Proposals for the construction of monitoring wells at the Environmental Conservation and Chemical Corporation (ECC) site, Zionsville, Indiana, addressed to Mr. Dennis Totzke will be received at CH2M HILL, 2929 North Mayfair Road, Milwaukee, Wisconsin, until 4:00 P.M. local time, on the 15th day of April 1983, and then will be privately opened and read.

The project contemplated consists of drilling and installation of monitoring wells and acquisition of soil samples around the ECC site, Zionsville, Indiana.

Before a Contract (Purchase Order) will be awarded for the work contemplated herein, the Engineer will conduct such investigation as is necessary to determine the performance record and ability of the apparent successful Bidder to perform the size and type of work specified under this Contract. Upon request, the Bidder shall submit such information as deemed necessary by the Engineer to further evaluate the Bidder's qualifications.

The attention of Bidders is directed to the applicable Federal and State requirements and conditions of employment to be observed and minimum wage rates to be paid under the Contract.

Any Contract awarded under this INVITATION TO BID is expected to be funded by the United States Environmental Protection Agency (USEPA, the Owner). Neither the United States nor any of its departments, agencies, or employees is or will be a party to this INVITATION TO BID or any resulting Contract.


Before a Contract will be awarded, compliance with all EPA requirements specified in the Contract Documents will be subject to EPA review and approval.

For information concerning the proposed work contact Dennis Totzke, CH2M HILL, 2929 North Mayfair Road, Milwaukee, Wisconsin, 414/774-5530.

The right is reserved to reject all Proposals or any Proposal not conforming to the intent and purpose of the Contract Documents, and to postpone the award of the Contract for a period of time which, however, shall not extend beyond 10 days from the bid opening date.

Dated this 1st day of April, 1983.

CH2M HILL CENTRAL, INC.

By 
Dennis Totzke, Project Manager

* * * * *

NOTE TO BIDDER: A Bidder will be selected based upon prices given in the Proposal, upon experience and qualifications, upon equipment and methods to be used, and upon the time required to complete the project. Therefore, please attach to your Proposal a brief statement of your past involvement in similar projects and a brief description of the equipment and methods you intend to use in the drilling and sampling program described in these Contract Documents. Please also indicate the time you estimate that you will require to complete three wells at each of four locations. Use preferably BLACK ink for completing this Proposal form.

PROPOSAL

To: CH2M HILL CENTRAL, INC.

 Attention: Dennis Totzke
 2929 North Mayfair Road
 Milwaukee, Wisconsin 53222
 Address:
 Project Title: Installation of Monitoring Wells at ECC Site

 Project No.: W65230.C3

 Bidder:
 Address:
 Date:
 Bidder's person to contact for additional information on this Proposal:
 Name:
 Telephone:

BIDDER'S DECLARATION AND UNDERSTANDING

The undersigned, hereinafter called the Bidder or the Contractor, declares that the only persons or parties interested in this Proposal are those named herein, that this Proposal is, in all respects, fair and without fraud, that it is made without collusion with any official of the Engineer or Owner, and that the Proposal is made without any connection or collusion with any person submitting another Proposal on this Contract.

The Bidder further declares that he has carefully examined the Contract Documents for the construction of the project, that he has inspected the site, that he has satisfied himself as to the quantities involved, including materials, and conditions of work involved, including the fact that the description of the quantities of work and materials, as included herein, is brief and is intended only to indicate the general nature of the work and to identify the said quantities with the detailed requirements of the Contract Documents, and that this Proposal is made according to the provisions and under the terms of the Contract Documents, which Documents are hereby made a part of this Proposal.

The Bidder further agrees that he has exercised his own judgment regarding the interpretation of subsurface information and has utilized all data that he believes pertinent from the Engineer, Owner, and other sources in arriving at his conclusions.

The Bidder further declares that he shall comply with all laws, statutes, and ordinances, Federal, state, and local, relative to the regular execution of the work, the employment of labor, protection of public and employee safety and health, all regulations regarding environmental protection, the protection of natural resources, fire protection, burning and nonburning regulations, permits, fees, and similar requirements.

CONTRACT EXECUTION

The Bidder agrees that if this Proposal is accepted, he will, within 5 days, not including Sundays and legal holidays, after notice of award, sign the Purchase Order in the form annexed hereto, and will at that time, to the extent of his Proposal, furnish all machinery, tools, apparatus, and other means of construction and do the work and furnish all the materials necessary to complete all work in the manner, in the time, and in accordance with the project requirements as specified in the Contract Documents and required by the Engineer.

CERTIFICATES OF INSURANCE

The Bidder further agrees to furnish CH2M HILL CENTRAL, INC., before commencing the work under this Contract, the certificates of insurance as specified in the Purchase Order, a copy of which is attached.

START OF DRILLING AND CONTRACT COMPLETION TIME

The Bidder further agrees to begin work within 5 calendar days after the date CH2M HILL CENTRAL, INC., issues a Notice to Proceed, and to complete the drilling services, in all respects, for which his Proposal is accepted within the number of calendar days after the date of execution of the Contract by the Engineer as set forth below:

42 calendar days

ADDENDA

The Bidder hereby acknowledges that he has received Addenda No's.
.....''' to these Specifications.
(Bidder insert No. of each Addendum received).

SALES AND USE TAXES

The Bidder agrees that all sales and use taxes are included in the stated bid prices for the work, unless provision is made herein for the Bidder to separately itemize the estimated amount of sales tax.

UNIT PRICE WORK

The Bidder further proposes to accept as full payment for the work proposed herein the amounts computed under the provisions of the Contract Documents and based on the following unit price amounts, it being expressly understood that the unit prices are independent of the exact quantities involved. The Engineer, without invalidating the Contract, may order changes in the work within the general scope of the Contract by altering, adding to, or deducting from the work, the Contract being adjusted accordingly. All such work shall be executed under the conditions of the original Contract, except as specifically adjusted at the time of ordering such. The Bidder agrees that the lump sum prices and the unit prices represent a true measure of the labor and materials required to perform the work, including all allowances for overhead and profit for each type and unit of work called for in these Contract Documents. The amounts shall be shown in both words and figures. In case of a discrepancy, the amount shown in words shall govern.

BIDDER

The name of the Bidder submitting this Proposal is

..... doing business at

.....
Street City State Zip

which is the address to which all communications concerned with this Proposal and with the Contract shall be sent.

The names of the principal officers of the corporation submitting this Proposal, or of the partnership, or of all persons interested in this Proposal as principals are as follows:

.....
.....
.....

If Sole Proprietor or Partnership

IN WITNESS hereto the undersigned has set his (its) hand this
day of, 19...

.....
Signature of Bidder

.....
Title

If Corporation

IN WITNESS WHEREOF the undersigned corporation has caused this instrument to be executed and its seal affixed by its duly authorized officers this
..... day of, 19...

(SEAL)

.....
Name of Corporation

By.....

Title.....

Attest.....

Secretary

* * * * *

PRICE BID FOR INSTALLATION OF MONITORING WELLS

<u>Item</u>	<u>Method of Payment</u>	<u>Estimated Quantity</u>	<u>Unit Price</u>	<u>LUMP SUM</u>	
				<u>Amount</u>	<u>(Words)</u>
A. Mobilization/Demobilization	Per Borehole	12	\$ ____	\$ ____	_____
B. Drilling of Sediments (overburden) with Continuous Split-Spoon Sampling	Per Foot	80'	\$ ____	\$ ____	_____
C. Drilling of Sediments (overburden) with 5-Foot Interval Split-Spoon Sampling	Per Foot	720'	\$ ____	\$ ____	_____
D. Drilling of Sediments (overburden) without Sampling	Per Foot	300'	\$ ____	\$ ____	_____
E. Drilling of Bedrock with "NX" Diameter Core Sampling	Per Foot	20'	\$ ____	\$ ____	_____
F. 2" I.D. Schedule 80 Threaded PVC Well Piping	Per Foot	800'	\$ ____	\$ ____	_____
G. 2" I.D. Schedule 40 Threaded PVC Well Piping	Per Foot	300'	\$ ____	\$ ____	_____
H. 2" I.D. Schedule 80 Threaded PVC Screen	Per Foot	40'	\$ ____	\$ ____	_____
I. 2" I.D. Schedule 40 Threaded PVC Screen	Per Foot	60'	\$ ____	\$ ____	_____
J. Cleaning of Equipment	Per Borehole	12	\$ ____	\$ ____	_____
K. Grout Seal	Per Foot of Annulus Filled	920'	\$ ____	\$ ____	_____
L. Bentonite	Per Foot of Annulus Filled	36'	\$ ____	\$ ____	_____
M. Gravel Pack	Per Foot of Annulus Filled	180'	\$ ____	\$ ____	_____

PRICE BID FOR INSTALLATION OF MONITORING WELLS
(Continued)

<u>Item</u>	<u>Method of Payment</u>	<u>Estimated Quantity</u>	<u>Unit Price</u>	<u>LUMP SUM</u>	
				<u>Amount</u>	<u>(Words)</u>
N. Steel Casing, Locking Cap & Concrete Pad	Per Well	12	\$ ____	\$ ____	_____
O. Well Development	Per Hour	36	\$ ____	\$ ____	_____
P. Standby Time	Per Hour	36	\$ ____	\$ ____	_____

GLT90/7-2

PART 2
CONTRACT FORMS



SERVICES (OR SUBCONSULTANT)
PURCHASE ORDER

PURCHASE ORDER NO. _____

PROJECT NO. _____

BILL AND
DELIVER TO:

CH2M HILL

V
E
N
D
O
R

DATE SERVICES: TO BEGIN _____ TO BE COMPLETED _____

NOTES:

1. IF THE DOLLAR VALUE OF THIS PURCHASE ORDER EXCEEDS \$10,000, ISSUER MUST ATTACH CH2M HILL E.E.O.C. FORM NO. 119A TO THIS PURCHASE ORDER, PURSUANT TO INSTRUCTIONS APPEARING ON THE REVERSE SIDE HEREOF.
2. PURCHASE ORDER NUMBER MUST APPEAR ON ALL INVOICES.

SCOPE OF WORK _____

SAMPLE

COMPENSATION:

THE GENERAL CONDITIONS APPEARING ON THE REVERSE SIDE HEREOF ARE A PART OF THIS PURCHASE ORDER, AS WELL AS ANY DRAWINGS, SPECIFICATIONS, OR OTHER PAPERS ATTACHED.

TERMS AND CONDITIONS ACCEPTED BY VENDOR.

VENDOR

BY

TITLE

DATE

SIGNED FOR CH2M HILL

EMPLOYEE NO.

DATE

COPY TO: VENDOR

**SERVICES PURCHASE ORDER
GENERAL CONDITIONS**

1. The work included in this purchase order shall be performed by vendor at its (his) own expense, including the furnishing of all labor, materials, and equipment required, and shall be performed strictly in accordance with the terms and conditions of CH2M HILL'S general contract with the owner (if applicable). The work shall be subject to the inspection and approval of CH2M HILL.
2. As required by CH2M HILL, vendor shall, during performance of services covered by this purchase order, maintain worker's compensation coverage in accordance with the laws of the state where the work is performed, and shall furnish certificates of insurance showing that he has auto and general liability coverage of \$500,000/\$1,000,000 for death and injury, and \$500,000 property damage, and professional liability coverage as deemed necessary by the project manager for CH2M HILL. The liability insurance coverage must be with a company or companies satisfactory to CH2M HILL. Certificates of such insurance shall be furnished to CH2M HILL by vendor prior to commencement of the work.
3. Vendor shall comply with all federal, state, and local laws, regulations, and ordinances applicable to the work to be done under this purchase order.
4. Vendor shall protect, defend, and indemnify CH2M HILL, its officers, employees, and agents of and from any and all claims, damages, compensation, suits, actions and expenses, including reasonable attorneys' fees, relating to any and all losses or damages sustained by, or alleged to have been sustained by any person, including employees of the parties hereto, and occasioned or allegedly occasioned in whole or in part by the negligent acts or omissions of the vendor, or anyone directly or indirectly employed by the vendor, while in any way engaged in the performance of this purchase order.
5. Vendor shall not sublet or assign any of the work covered by this purchase order except with prior written approval of CH2M HILL.
6. Vendor may submit claims to CH2M HILL for progress payments not more than once each month by the 25th of each month; such payments will be made within ten (10) days of receipt by CH2M HILL of reimbursement by the owner for each claim, except that claims for progress payments in amounts less than \$500.00 will be paid when normally due without regard to CH2M HILL'S reimbursement by the owner.
7. If it becomes necessary for CH2M HILL to take legal action to enforce any term of this purchase order, vendor shall be liable to CH2M HILL for all costs incurred in such legal action, including reasonable attorneys' fees.

INSTRUCTION TO ISSUER:

CH2M HILL is required by federal law (Executive Order 11246) to pass equal employment opportunity provisions along to its subconsultants and vendors; therefore, if the dollar value of this purchase order exceeds \$10,000, issuer must attach CH2M HILL E.E.O.C. Form No. 119A to this purchase order. Vendor's signature of acceptance on the reverse side of this form will include acceptance of the E.E.O.C. Form No. 119A and its provisions, when attached to this purchase order.



CH2M HILL
CONTRACTORS, SUBCONTRACTORS, VENDORS AND SUPPLIERS
EQUAL OPPORTUNITY ADDENDUM

Vendor acknowledges that for all contracts and/or purchase orders issued or entered into with CH2M HILL, in favor of the Vendor, this supplement, when applicable conditions prevail, will automatically be a part of and an attachment to CH2M HILL Purchase Order Form Number 119; therefore, Vendor agrees to the following provisions:

EQUAL OPPORTUNITY CLAUSE

Vendor shall be bound by and agrees to the following provisions as contained in Section 202 of Executive Order 11246 to wit:

1. The Vendor will not discriminate against any employee or application for employment because of race, color, religion, sex, or national origin. The Vendor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Vendor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
2. The Vendor will, in all solicitations or advertisements for employees placed by or on behalf of the Vendor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
3. The Vendor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice advising the labor union or workers' representative of the Vendor's commitments under Section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The Vendor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
5. The Vendor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the Secretary of Labor for purpose of investigation to ascertain compliance with such rules, regulations, and orders.
6. In the event of the Vendor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this Purchase Order/Contract may be cancelled, terminated or suspended in whole or in part and the Vendor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
7. The Vendor will include the provisions of paragraphs (1) through (7) in every Subcontract or Purchase Order unless exempted by rules, regulations or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each Subcontractor or Vendor. The Vendor will take such action with respect to any Subcontract or Purchase Order as the Secretary of Labor may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event the Vendor becomes involved in, or is threatened with, litigation with a Subcontractor or Vendor as a result of such direction by the Secretary of Labor, the Vendor may request the United States to enter into such litigation to protect the interests of the United States.

AFFIRMATIVE ACTION COMPLIANCE PLAN

The Vendor further agrees and certifies that if the value of any contract or purchase order is \$50,000 or more and the Vendor has 50 or more employees the Vendor will, if so required, develop and maintain a written Affirmative Action Compliance Program for each of its establishments as required by Title 41, Code of Federal Regulations, Section 60-2.

CERTIFICATION OF NONSEGREGATED FACILITIES

Vendor certifies that he does not and will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not and will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The phrase "segregated facilities" includes facilities which are in fact segregated on a basis of race, color, creed, or national origin because of explicit directive or by habit, local custom, or otherwise. Vendor agrees that he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Employment Opportunity Clause.

**EMPLOYER INFORMATION REPORT (EEO-1,
STANDARD FORM 100)**

The Vendor further agrees and certifies that if the value of any contract or purchase is \$50,000 or more and the Vendor has 50 or more employees, the Vendor will file a complete and accurate report on Standard Form 100 (EEO-1) with the appropriate Federal agency within thirty (30) days of the date of contract award, unless such a report has been filed within the twelve (12) month period preceding the date of the contract award; and otherwise comply and file such other compliance reports as may be required under regulations adopted thereunder.

(cont. on reverse side)

EMPLOYMENT OF VETERANS

1. As provided in Executive Order 11701 (41 CFR 50-250) the Vendor agrees that all employment openings of the Vendor which exist at the time of execution of this contract and those which occur during the performance of this contract, including those not generated by the contract and including those occurring at an establishment of the Vendor other than the one wherein the contract is being performed but excluding those of independently operated corporate affiliates, shall, to the maximum extent feasible, be offered for listing at an appropriate local office of the Federal-State Employment Service system wherein the opening occurs and to provide such periodic reports to such local office regarding employment openings and hires as may be required: Provided, that this provision shall not apply to openings which the Vendor fills from within the Vendor's organization or are filled pursuant to a customary and traditional employer-union hiring arrangement and that the listing of employment openings shall involve only the normal obligations which attach to the placing of job orders.
2. The Vendor agrees further to place the above provision in any subcontract directly under this contract.
3. As provided in Section 2012 of the Vietnam Veterans Readjustment Act of 1974, with respect to all Contracts in the amount of \$10,000 or more, the Vendor shall take affirmative action to employ and advance in employment qualified disabled veterans and veterans of the Vietnam era.

EMPLOYMENT OF HANDICAPPED

Vendor shall be bound by and agrees to the provisions of Section 503 of the Rehabilitation Act of 1973, and all regulations, rules, and orders promulgated thereunder, to wit:

1. The Vendor will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant is qualified. The Vendor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices such as the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising; layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.
2. The Vendor agrees, that if a handicapped individual files a complaint with the Vendor that he is not complying with the requirements of the Act, he will (1) investigate the complaint and take appropriate action consistent with the requirements of 20 CFR 741.29 and (2) maintain on file for three (3) years the record regarding the complaint and the actions taken.
3. The Vendor agrees that, if a handicapped individual files a complaint with the Department of Labor that he has not complied with the requirements of the Act (1) he will cooperate with the Department in its investigation of the complaint, and (2) he will provide all pertinent information regarding his employment practices with respect to the handicapped.
4. The Vendor agrees to comply with rules and regulations of the Secretary of Labor in 20 CFR Ch. VI, Part 741.
5. In the event of the Vendor's noncompliance with the requirements of this clause, the contract may be terminated or suspended in whole or in part.

MINORITY BUSINESS ENTERPRISE (Executive Order 11625)

1. It is the policy of the Government that minority business enterprises shall have the maximum practicable opportunity to participate in the performance of Government contracts.
2. The Vendor agrees to use his best efforts to carry out this policy in the award of his subcontracts to the fullest extent consistent with the efficient performance of the contract. As used in this contract, the term "Minority Business Enterprise" means a business, at least 50 percent of which is owned by minority group members or, in the case of publicly owned business, at least 51 percent of the stock of which is owned by minority group members. For the purposes of this definition, minority group members are Negroes, Spanish-speaking American persons, American-Orientals, American-Indians, American-Eskimos, and the American Aleuts. Vendors may rely on written representations by subcontractors regarding their status as minority business enterprises in lieu of an independent investigation.

PART 3
SPECIFICATIONS

ABBREVIATIONS

Whenever in these Contract Documents the following abbreviations are used, the intent and meaning shall be interpreted as follows:

AA	Aluminum Association
AAMA	Architectural Aluminum Manufacturers' Association
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AFBMA	Anti-Friction Bearing Manufacturers' Association
AGA	American Gas Association
AGMA	American Gear Manufacturers' Association
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
AREA	American Railway Engineering Association
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWI	Architectural Woodwork Institute
AWS	American Welding Society
AWPA	American Wood Preservers' Association
AWPB	American Wood Preservers Bureau
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers' Association
CBMA	Certified Ballast Manufacturers' Association
CDA	Copper Development Association
CISPI	Cast Iron Soil Pipe Institute
CMAA	Crane Manufacturers' Association of America
CRSI	Concrete Reinforcing Steel Institute
Fed. Spec.	Federal Specifications
HI	Hydraulic Institute
HNI	Hoist Manufacturers' Institute
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronics Engineers, Inc.
ICEA	Insulated Cable Engineers' Association
JIC	Joint Industry Conferences of Hydraulic Manufacturers

MMA	Monorail Manufacturers' Association
NBHA	National Builders' Hardware Association
NEC	National Electrical Code
NEMA	National Electrical Manufacturers' Association
NESC	National Electric Safety Code
NFPA	National Fire Protection Association
NLMA	National Lumber Manufacturers' Association
NWMA	National Woodwork Manufacturers' Association
OEI	Overhead Electrical Crane Institute
OSHA	Occupational Safety and Health Act (both Federal & State)
PS	Product Standards Section - U.S. Department of Commerce
RLI	RLI Standards Institute, Inc.
RMA	Rubber Manufacturers' Association
SAE	Society of Automotive Engineers
SDI	Steel Door Institute
SSPC	Steel Structures Painting Council
TEMA	Tubular Exchanger Manufacturers' Association
TCA	Title Council of America
UBC	Uniform Building Code
UL	Underwriters' Laboratories, Inc.
WWPA	Western Wood Products Association

Unless a particular issue is designated, all references to the above specifications, standards, or methods shall, in each instance, be understood to refer to the issue in effect (including all amendments) on the date of the INVITATION TO BID.

* * * * *

01010 SUMMARY OF WORK
-----A. GENERAL

This section describes the project in general, and provides an overview of the extent of the work to be performed under this Contract. Detailed requirements and extent of work are stated in the applicable Specification sections and shown on the Drawings. The Contractor shall, except as otherwise specifically stated herein or in any applicable parts of the Contract Documents, provide and pay for all labor, materials, equipment, tools, construction equipment, and other facilities and services necessary for proper execution, testing, and completion of the work under this Contract.

B. CONTRACT DOCUMENTS

The Contract Documents include the Bidding Requirements, Contract Forms, Conditions of the Contract, Specifications, Drawings, Addenda, and all requirements and provisions incorporated therein by specific reference thereto. They are intended to be self-explanatory and cooperative, and to describe and provide for a complete work. Bidders are required to familiarize themselves with the provisions of the Contract Documents and make available to prospective suppliers and subcontractors such information derived therefrom that applies to suppliers and subcontractors.

C. SPECIFICATIONS

The Specifications included in these Contract Documents establish the performance and quality requirements for materials and equipment and the minimum standards for the quality of workmanship and appearance. Generally, there has been no attempt to separate the Specification sections into groups for work to be performed by the various trades. Should there be any question as to the interpretation of any particular Specification section or part of a Specification section, such question should be directed to the Engineer prior to the submittal of a Proposal for the work under this Contract.

Wherever in these Specifications the words "approved" or "as approved" appear unmodified, they shall be understood to mean "as approved by the Engineer."

D. REASONABLY IMPLIED PARTS OF THE WORK SHALL BE DONE THOUGH ABSENT FROM

SPECIFICATIONS

Any part of the work which is not mentioned in the Specifications but is shown on the Drawings, or any part not shown on the Drawings but described in the Specifications, or any part not shown on the Drawings nor described in the Specifications, but which is necessary or normally required as a part of such work, or is necessary or required to make each installation satisfactorily and legally operable, shall be performed by the Contractor as incidental work without extra cost to the Engineer, as if fully described in the Specifications and shown on the Drawings, and the expense thereof shall be included in the applicable unit prices or lump sum bid for the work.

E. DESCRIPTION OF WORK

The work will consist of (1) sampling of sediments and bedrock and (2) drilling and installation of monitoring wells around the ECC site, Zionsville, Indiana, (see Drawing No. 1).

The landfill and adjacent areas are underlain by a variety of unconsolidated glacial deposits, consisting primarily of interbedded sands, silts, and clays. The depth to bedrock is estimated to be 200 feet. The slope of the ground is irregular in detail but is generally easterly and southerly, toward Finley Creek. Access to much of the site is by a network of gravel and dirt roads.

Drawing 2 shows a map of the site at a scale of 1 inch = 125 feet. Some roadways and buildings are also indicated on the Drawings, as is the boundary of the ECC site.

The Contractor will drill borings and install wells at each of a number of locations peripheral to the ECC site; no borings will be drilled on the hazardous waste site or in areas known to have been filled.

It is anticipated that three borings will be required at each of four locations. The purpose of these multiple borings is to allow the installation of multiple monitoring wells, each one finished at a different depth, in a single location. It is estimated that borings will be required at no fewer than four and no more than six locations. However, the Engineer reserves the right to determine the number of locations, and the number of borings at each location, during the course of drilling.

It is anticipated that, at most locations, the first boring will be drilled into bedrock; the depth of penetration into bedrock will not exceed 10 feet. Second and third borings at each location will be entirely in sediment and will be drilled to progressively shallower depths. The Engineer will determine the final depth of each boring during the course of drilling.

The contractor will be responsible for insuring that deeper aquifers are protected from contamination during drilling from annulus bypass from upper penetrated aquifers. The contractor will provide a plan subject to approval by the engineer, for the protection of deeper aquifers.

The Contractor will obtain samples of sediment and bedrock from borings as requested by the Engineer. It is anticipated that only the deepest borings at each location will be sampled. Sediment samples will be taken by split-spoon sampler continuously to a depth of 20 feet and at five-foot intervals and at each change in sediment type below the 20 foot depth. Bedrock samples (if any) will be taken by coring.

Methods of drilling are anticipated to be air rotary or cable tool but will be at the discretion of the Contractor, subject to the approval of the Engineer. Under no circumstances, however, will the Contractor introduce drilling mud, additives, or fluids other than water into the borehole. Any water used by the Contractor must be free of contaminants and approved by the Engineer.

The Contractor will install screened PVC monitoring wells in each borehole, at the discretion of and to the depth determined by the Engineer. The construction of the wells is shown schematically in Drawings Nos. 3 and 4. The Contractor will develop all wells to a condition free of sand and silt, as approved by the Engineer.

The Contractor will, at the request of the Engineer, conduct falling-head permeability tests at each location and borehole. The Engineer may request that such tests be performed during the drilling of the first borehole at a location; he may also request such tests upon the completion of a well.

The Contractor will, at the request of the Engineer, clean all equipment that will enter or be introduced into a borehole. Equipment to be cleaned will include casings, screens, rods, drill bits, samplers and augers.

During all drilling operations that could involve contact with contaminated earth materials or groundwater, the Engineer will monitor for contaminants. If the Engineer deems that protection from contaminated earth materials or groundwater is necessary, the Contractor will provide protective devices to his employees or subcontractors involved in the drilling.

F. LIST OF DRAWINGS

<u>Number</u>	<u>Title</u>
1	ECC Vicinity Map
2	ECC Site Map
3	Shallow and Intermediate Monitoring Well Construction
4	Deep Monitoring Well Construction

* * * * *

01011 SITE CONDITIONS
-----A. SITE INVESTIGATION AND REPRESENTATION

The Contractor acknowledges that he has satisfied himself as to the nature and location of the work, the general and local conditions, particularly those bearing upon availability of transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads, and uncertainties of weather or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during the prosecution of the work and all other matters that can in any way affect the work or the cost thereof under this Contract.

The Contractor further acknowledges that he has satisfied himself as to the character, quality, and quantity of surface and subsurface materials to be encountered from inspecting the site and from evaluating information that may have been included in these Contract Documents. Any failure by the Contractor to acquaint himself with all the available information will not relieve him from responsibility for properly estimating the difficulty or cost of successfully performing the work.

B. INFORMATION ON SITE CONDITIONS

All information obtained by the Engineer regarding site conditions, topography, subsurface information, groundwater elevations, existing construction of site facilities as applicable, and similar data will be available for inspection at the office of the Engineer upon request. Such information is offered as supplementary information only. The Engineer assumes no responsibility for the completeness or for the Contractor's interpretation of such supplementary information.

C. CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTIES AND SERVICE

Where the Contractor's operations could cause damage or inconvenience to telephone, television, power, oil, gas, or water systems, the Contractor shall make all arrangements necessary for the protection of these utilities and services.

The Contractor shall be solely and directly responsible to the Owners and operators of such properties for any damage, injury, expense, loss, inconvenience, delay, suits, actions, or claims of any character brought because of any injuries or damage which may result from the construction operations under this Contract.

Neither the Engineer nor its officers or agents shall be responsible to the Contractor for damages as a result of the Contractor's failure to protect utilities encountered in the work.

In the event of interruption to domestic water, sewer, storm drain, or other utility services as a result of accidental breakage due to construction operations, promptly notify the proper authority. Cooperate with said authority in restoration of service as promptly as possible and bear all costs of repair. In no event shall interruption of any utility service be allowed outside working hours unless granted by the owner of the utility.

The Contractor shall replace, at his own expense, any and all other existing utilities or structures removed or damaged during construction, unless otherwise provided for in these Contract Documents.

C. INTERFERING STRUCTURES

Protect existing structures from damage whether or not they lie within the limits of the easements obtained by U. S. EPA (the Owner). Where existing fences, gates, barns, sheds, buildings, or any other structure must be removed to properly carry out the work, or are damaged during the work, they shall be restored at the Contractor's expense to their original condition and to the satisfaction of the property owner.

D. EASEMENTS

Where portions of the work will be located on public or private property, easements and permits are being obtained by the USEPA (the Owner). Easements will provide for the use of property for construction purposes only to the extent indicated on the easements. Copies of these easements and permits will be available from the Engineer for inspection. It shall be the Contractor's responsibility to determine the adequacy of the easement obtained in every case and abide by all requirements and provisions of the easement. The Contractor shall confine his construction operations to within the easement limits or make special arrangements with the property owners or appropriate public agency for the additional area required. Any damage to property, either inside or outside the limits of the easements provided by the Owner, shall be the responsibility of the Contractor.

It is anticipated that all the required easements and permits will be obtained before construction is started. However, should the procurement of any easement or permit be delayed, the Contractor shall schedule his work in such a way that his operations are confined to areas where easements or permits have been obtained or are not required, until such a time as the easement or permit has been secured.

* * * * *

01016 SAFETY REQUIREMENTS AND PROTECTION OF PROPERTY
-----A. CONTRACTOR'S RESPONSIBILITY FOR SAFETY

Work covered by these Contract Documents will be conducted in the near vicinity of, but not on a listed hazardous waste site. Because of the potential for offsite contamination, all work will be accomplished in accordance with the health and safety plan established by CH2M HILL.

The Contractor shall do whatever work is necessary for health and safety and be solely and completely responsible for conditions of the Jobsite, including the health and safety of all persons (including employees) and property during the Contract period. This requirement shall apply continuously and not be limited to normal working hours.

In addition, the contractor will arrange for all of its employees that will be working on the project site to take a safety and health training course from Ecology & Environment, Inc., Buffalo, New York, said course more particularly referred to as Personnel Protection. The costs and expenses for the employees taking such course will be paid by contractor. Proof of completion of such course by each employee who is to work on the project site shall be furnished to CH2M HILL prior to any such employee entering the site for any purpose. If contractor prefers to pursue some alternate training for its employees, such alternate must be mutually agreed to by contractor and CH2M HILL prior to contractor pursuing such alternate.

With respect to equipment and protective clothing to be used and worn by employees of contractor while on the project site, contractor agrees that each employee will wear the protective clothing and use the equipment as specified in Exhibit A at all times that such employee is directed to by the CH2M HILL site engineer. The contractor shall pay for the costs of providing such equipment and protective clothing.

B. FEDERAL, STATE, AND LOCAL SAFETY REQUIREMENTS

Safety provisions shall conform to the Federal and State Departments of Labor Occupational Safety and Health Act (OSHA), and all other applicable Federal, State, County, and local laws, ordinances, codes, the requirements set forth herein, and any regulations that may be specified in other parts of these Contract Documents. Where any of these are in conflict, the more stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize himself with the aforementioned safety provisions shall not relieve him from compliance with the obligations and penalties set forth therein.

C. SAFE ACCESS BY FEDERAL, STATE, AND LOCAL GOVERNMENT OFFICIALS

The Contractor shall at all times provide proper facilities for safe access to the work by authorized government officials.

D. PROTECTION OF PROPERTY

The Contractor shall employ such means and methods as necessary to adequately protect public and private property against damage. In the event of damage to such property, the Contractor shall, at his own expense, immediately restore the property to a condition equal to its original condition and to the satisfaction of the Engineer and the owner of said property.

* * * * *

02580 MOBILIZATION AND CLEANUP

A. SCOPE

This section covers the work necessary to move in and move out personnel and equipment, set up and remove drill rigs and temporary facilities, and clean up each drilling location, complete.

B. MATERIALS AND EQUIPMENT

Provide all materials and equipment required to accomplish the work as specified.

C. WORKMANSHIP

Set up well drilling equipment within the area designated by the Engineer. Accomplish all required work in accordance with applicable portions of these Specifications or as approved by the Engineer.

Some obstructions may not be shown. Bidders are advised to carefully inspect the existing facilities before preparing their proposals. The removal and replacement of minor obstructions such as electrical conduits, air, water, waste piping, and similar items shall be anticipated and accomplished, even though not shown or specifically mentioned.

SECURITY FENCE

Contractor's security fence may be constructed for the protection of materials, tools, and equipment of the Contractor and subcontractors, as approved by the Engineer. At completion of the work at a given drilling location, remove fence from that location and restore the area.

CONTAMINATION PRECAUTIONS

Avoid contamination of the drilling location. Do not dump waste oil, rubbish, or other similar materials on the ground. Proper containment and disposal of drilling fluids will be required.

CLEANUP OF CONSTRUCTION AREAS

Upon completion and acceptance of the borings at each drilling location, remove from the drilling location the drill rig and equipment, complete, and all debris, unused materials, temporary construction buildings, and other miscellaneous items resulting from or used in the operations. Replace or repair any facility that has been damaged during the construction work. Restore the location as nearly as possible to its original condition, to the satisfaction of the Engineer.

D. PAYMENT

Payment will be made only for each location occupied, not for each boring drilled. Payment for all work, materials, and equipment specified in this section will be at the lump sum price as stated in the Contractor's Proposal for MOBILIZATION AND DEMOBILIZATION.

* * * * *

02581 DRILLING

A. SCOPE

This section covers the work, materials, and equipment necessary for drilling the well bores, complete.

B. MATERIALS AND EQUIPMENT

All equipment shall be in approved condition prior to use in the work. Operate and maintain equipment in strict conformance with manufacturer's recommendations.

DRILLING EQUIPMENT

Provide an approved drilling rig capable of completing the well as shown on the attached well construction drawings (Drawing Nos. 3 and 4).

Provide all tools, bits, and all other necessary equipment for drilling.

DRILLING FLUID

Provide all drilling water as required and as approved by the Engineer. Under no circumstances shall the Contractor introduce drilling mud, additives, or fluids other than water into the borehole. Water provided by the Contractor must be free of contaminants. Samples of drilling water shall be provided to the Engineer in the field. The Engineer will check the samples for contamination using an HNU analyzer.

TEST AND SAMPLING EQUIPMENT

Provide approved sampling containers for bedrock samples: (wooden core boxes for bedrock). Approved sediment sampling containers will be provided by the Engineer.

C. WORKMANSHIP

DRILLING

Notify the Engineer 3 days (Saturdays, Sundays, and holidays excepted) prior to drilling.

Provide at all times a thoroughly experienced, competent, and licensed driller during all operations at the drillsite.

Drill the boreholes of the dimensions shown on the attached well construction drawings (Drawings Nos. 3 and 4), or as approved by the Engineer. The exact location will be determined by the Engineer in the field.

The boreholes shall be drilled so as to permit the installation of the casing, well piping and screen(s) straight and plumb as specified in Section WELL PIPING AND SCREENS.

Prevent contamination of the samples or the sediments or bedrock being drilled. Do not introduce muds, clays, or drilling aids into the well. Do not use lime, cement, organic matter, or other material to stop circulation losses of the drilling water, without specific approval of the Engineer.

The Contractor may check plumbness, out-of-roundness, and straightness of the drilled hole as the drilling progresses at his own expense.

COMPLIANCE WITH GOVERNMENTAL REGULATIONS

Construct the well in strict conformance with all laws, rules, regulations, and standards related to the construction of wells in the State of Indiana, the County of Boone and the Town of Zionsville.

FORMATION SAMPLES

In the first boring at each location, the Contractor will assist the Engineer in taking representative formation samples between the ground surface and the full depth of the sediments. Samples shall be taken in sediments (overburden) continuously to a depth of 20 feet and at each 5-foot level and each change in formation or material type below the 20 foot depth. The method and procedure of sampling shall be by split-spoon sampler, as approved by the Engineer. The method approved must yield samples that are representative of the actual depth to which drilling has progressed.

Each sediment sample shall be at least 1 quart in volume. Each sample will be placed in an approved container labeled with the date, well identification, and depth from which the sample was taken clearly marked on the container.

In the first boring at each location, take bedrock cores from bedrock surface to a depth below bedrock surface of no more than 10 feet, as requested by the Engineer. The method and procedure of sampling shall be approved by the Engineer. Submit cores to the Engineer immediately.

PERMEABILITY TESTING

In the shallow boring at each location, falling-head permeability tests will be conducted by the Contractor, as requested by the Engineer. Falling-head tests will consist of raising or lowering water level in the borehole above or below the standing water level, followed by observations of the rate of change of water level in the borehole.

PROTECTION OF WATER QUALITY

Take all necessary precautions to prevent contaminated water, gasoline, or other deleterious substances from entering the well, either through the opening or by seepage through the ground surface. Maintain precautions during and after construction of the well until accepted by the Engineer. See Paragraph E of Section 01010, SUMMARY OF WORK.

DRILLING AND WELL LOGS

Furnish the Engineer a daily drilling log. The log shall accurately describe the geologic materials and depths encountered; the presence or absence of water; depths of lost circulation zones and methods of regaining circulation; drilling rates; time, depth, and description of any unusual occurrences or problems during drilling; and diameters and lengths of material installed. Keep the log up-to-date with the progress of drilling. Keep a copy at the drillsite for inspection by the Engineer. Use reproductions of the Daily Drilling Report located at the end of this section, or approved equal.

Prepare and submit a final well log that shall include geologic log; borehole diameters; depth of the bottom of the casing and/or the bottom of the borehole; casing diameters and wall thicknesses; cemented zones; perforated or screened interval(s); type, size, and quantity of gravel pack installed; amount of sand removed during development; and other information from the daily logs pertinent to the well construction. File all records and reports with the proper agencies required by federal, state, and local codes or regulations.

DISPOSAL OF CUTTINGS AND WATER

Dispose of all cuttings, water, or other material removed by drilling operations that are not required to complete the work. Dispose of such material at a location and in a manner as approved by the Engineer.

D. PAYMENT

Drilling will be measured in linear feet of hole drilled, to the nearest foot.

Payment for all work, materials, and equipment specified in this section will be made at the unit price per foot drilled as stated in the Contractor's Proposal for DRILLING.

Payment for permeability testing will be at the unit price per hour, to the nearest half hour, as stated in the Contractor's proposal for WELL DEVELOPMENT.

(See next page for Daily Drilling Report)

UNITED STATES DISTRICT COURT

Well No.:

Depth of Well	Depth to Water (below ground)
10	10
20	20
30	30
40	40
50	50
60	60
70	70
80	80
90	90
100	100
110	110
120	120
130	130
140	140
150	150
160	160
170	170
180	180
190	190
200	200
210	210
220	220
230	230
240	240
250	250
260	260
270	270
280	280
290	290
300	300
310	310
320	320
330	330
340	340
350	350
360	360
370	370
380	380
390	390
400	400
410	410
420	420
430	430
440	440
450	450
460	460
470	470
480	480
490	490
500	500
510	510
520	520
530	530
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780	780
790	790
800	800
810	810
820	820
830	830
840	840
850	850
860	860
870	870
880	880
890	890
900	900
910	910
920	920
930	930
940	940
950	950
960	960
970	970
980	980
990	990
1000	1000

Start of Shift feet
End of Shift feet

.....

Description

From	To
XXXXXXXXXXXXXXXXXXXX	

Remarks: (Character of drilling, casings added, miscellaneous work items, etc.)

Driller:5.....

Helper:

* * * * *

02583 WELL PIPING AND SCREEN

A. SCOPE

This section covers the work, materials, and equipment necessary for furnishing and installing the well piping and well screen, complete.

B. MATERIALS AND EQUIPMENT

Provide all materials and equipment necessary for joining and installing the piping and screen as specified.

WELL PIPING AND SCREEN

Provide all piping of the types, thicknesses, diameters, and weights as specified. All piping and screen shall be of new first quality material and free of defects in workmanship and handling.

All well piping shall be made of PVC plastic that conforms to ASTM specifications, or equal, as approved by the Engineer. The piping shall be as specified in the following listing:

2 inch ID, Schedule 80 equivalent or greater, for the deep wells in each cluster. 2 inch ID, Schedule 40 equivalent or greater, for all other wells in each cluster.

All screen shall be made of PVC plastic that conforms to ASTM specifications or equal, as approved by the Engineer. All screen shall be factory-made, slotted pipe, 2 inch ID, No. 20 slot size, Schedule 80 for deep wells, and Schedule 40 for all other wells; or as approved by the Engineer.

FITTINGS

Provide all fittings, drive shoes, and centering guides as shown on the Drawings Nos. 3 and 4 or as necessary to complete the well.

C. WORKMANSHIP

Install specified well piping and screen in hole plumb and straight as defined in the STRAIGHTNESS AND PLUMBNESS paragraph of this section.

The length of well piping and screen to be installed will be determined by the Engineer.

All well piping shall be installed by a method appropriate to Drawing Nos. 3 and 4, as selected by the Contractor and approved by the Engineer.

Well piping lengths and screen shall be joined watertight by a method appropriate to the material used, as selected by the Contractor and approved by the Engineer, so that the resulting joint shall have the same structural integrity as the well piping itself.

All well piping and screens shall have threaded and coupled joints. Couplings shall be API or equivalent, made up so that when tight, all threads will be buried in the lip of the coupling.

Since plastic well piping is used, the piping sections and screen shall be joined watertight by the use of threaded and coupled joints. Teflon tape shall be applied to all joints before joining. Under no circumstances shall solvents be used in the construction of these wells.

Attach centering guides spaced at 120-degree intervals around the well piping and screen 5 feet from the bottom end and thereafter every 40 feet, or as approved by the Engineer.

Well piping and screen that fails, collapses, or separates during construction shall be removed from the hole and repaired or replaced at Contractor's expense by methods approved by the Engineer.

STRAIGHTNESS AND PLUMBNESS

All wells shall be constructed and all well piping and screens set round, straight, and plumb as approved by the Engineer.

D. PAYMENT

Installed well piping and screen will be measured in linear feet to the nearest foot.

Payment for providing and installing all well piping and screen will be made at the unit prices per foot installed, as stated in the Contractor's Proposal for WELL PIPING and in the Contractor's Proposal for SCREEN.

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02584 GROUT SEAL AND BENTONITE

A. SCOPE

This section covers the work, materials, and equipment necessary for furnishing and installing the grout seal and bentonite, complete.

B. MATERIALS AND EQUIPMENT

Provide all grout and bentonite and the materials and equipment necessary for placement of the grout and bentonite as specified.

PORTLAND CEMENT

Conform to ASTM C 150, Type I or III.

SAND AND AGGREGATE

Use only clean, durable sand and aggregate with suitable gradation for fluid grout. Submit sample to the Engineer for approval prior to use.

BENTONITE

Bentonite required for the sealing of the wells as shown in Drawings Nos. 3 and 4 shall be in a pellet form.

C. WORKMANSHIP

CONCRETE GROUT MIX

Proportion five bags of cement per cubic yard of concrete to not more than 6 gallons of water per bag of cement.

ADDITIVES

The use of special cements, bentonite to reduce shrinkage or other admixtures (ASTM C 494) to reduce permeability, increase fluidity and/or control set time, and the composition of the resultant slurry must be approved by the Engineer.

Consistency and method of mixing shall be approved by the Engineer.

PLACING

Secure the Engineer's approval of the method of grout placement. If grouting below the water table, no method will be approved that does not force grout from the bottom of the space to be grouted to the surface. The grouting shall be done continuously and in such a manner as will ensure the entire filling of the annular space in one operation.

D. PAYMENT

Installed grout seal and bentonite will be measured in linear feet to the nearest foot.

Payment for all work, materials, and equipment specified in this section will be made at the unit price per foot installed as stated in the Contractor's Proposals for GROUT SEAL AND BENTONITE.

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02586 GRAVEL PACK

A. SCOPE

This section covers the work, materials, and equipment necessary for furnishing and installing the gravel pack, complete.

B. MATERIALS AND EQUIPMENT

Provide all gravel and the materials and equipment necessary for placing the gravel pack as specified.

GRAVEL

The gravel shall be thoroughly washed, sound, durable, well rounded basalt or siliceous material containing, when delivered, less than 5 percent silt and clay, and no organic material, anhydrite, gypsum, mica, or calcareous material. Specific gravity shall be not less than 2.5.

The size and gradation of the gravel packing material will be determined by the Engineer on the basis of formation samples taken by the Contractor during drilling.

Submit to the Engineer a 5-pound sample of proposed gravel pack material prior to use.

GRAVEL SOUNDING DEVICE

Provide a measuring device to sound the gravel level in the hole during placement to detect bridging.

C. WORKMANSHIP

PLACING GRAVEL

For each well, the Engineer shall determine whether the installation of a gravel pack is necessary.

The gravel shall be introduced at a metered uniform rate in a manner that will allow even placement of the gravel, as approved by the Engineer. Every precaution shall be taken to ensure placement of the gravel pack continuously from the bottom of the well screen to a point above the well screen without separation or bridging of the materials as they are introduced into the well. During placement of the gravel, the top of the gravel shall be continuously sounded to measure its rate of rise and to determine if bridging is occurring.

D. PAYMENT

Installed gravel pack will be measured in linear feet to the nearest foot.

Payment for all work, materials, and equipment specified in this section will be made at the unit price per foot installed as stated in the Contractor's Proposal for GRAVEL PACK.

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02587 WELL DEVELOPMENT

A. SCOPE

This section covers the work, materials, and equipment necessary for the development of the well, complete.

The Engineer shall be the sole Judge as to when development is complete and may therefore increase or decrease the total development time.

B. MATERIALS AND EQUIPMENT

PUMPING EQUIPMENT

Furnish and install air-lift pumping equipment, or approved equal.

JETTING EQUIPMENT

Furnish and install high-pressure hydraulic Jetting equipment, air-lift Jetting equipment, or approved equal.

C. WORKMANSHIP

WELL DEVELOPMENT

After the well screen has been installed, develop the well by Jetting and/or surging. The Contractor shall specify in the proposal what method will be used.

The well development shall be done at the Engineer's direction. The equipment shall be assembled and operated so that Jet streams of water are directed into the well screen. During well development, the tool shall be slowly rotated and moved up and down within the screen so that the Jet streams or annulus waters are directed against all parts of the screen.

If the screened portion of the well fills with fines prior to completion of development, the development equipment shall be removed and the well cleaned to the bottom before resuming development.

After initial development, the well shall be sounded and cleaned to the bottom by bailing or other approved method.

PUMPING DEVELOPMENT

Operate the pumping development equipment continuously at such rates of discharge and for such periods of time as prescribed by the Engineer. The well shall be pumped until the water is free from sand, silt, and turbidity. The Engineer shall judge when development by pumping is complete.

PERMEABILITY TESTING

Falling or constant head permeability tests will be conducted by the Contractor in the completed well, if and as requested by the Engineer. Tests will consist of raising or lowering the water level in the well above or below the standing water level, followed by observations of the rate of change of water level in the borehole.

DISPOSAL OF WATER

Dispose of such water at a location and in a manner as approved by the Engineer.

D. PAYMENT

Payment for permeability testing will be at the unit price per hour, to the nearest half hour, as stated in the Contractor's proposal for WELL DEVELOPMENT.

Payment for development of the well, regardless of the method(s) used, will be made at the unit price per hour, to the nearest half hour, as stated in the Contractor's Proposal for WELL DEVELOPMENT. The Contractor will not be paid the hourly rate for development during the time the equipment is not actually in use in the development of the well, or for any equipment repair, or for any time, in the opinion of the Engineer, that the development procedure is not being accomplished in accordance with these Specifications, his direction, or both. Payment at the hourly rate shall constitute full compensation for all work, materials, and equipment specified in this section.

* * * * *

02588 CLEANING OF EQUIPMENT

A. SCOPE

This section covers the work, materials, and equipment necessary for cleaning all equipment to be introduced into a borehole, complete.

B. GENERAL

At the request of the Engineer, all equipment to be introduced into a borehole must be cleaned prior to introduction. Equipment to be cleaned will include (but not necessarily be limited to) casing, well piping, screens, rods, drill bits, samplers, and augers. The cleaning process consists of hosing the drilling equipment with a high pressure hot water rinse, then rinsing the equipment with methanol, and repeating a rinse with high pressure hot water.

C. MATERIALS AND EQUIPMENT

The Contractor must provide all equipment necessary for this cleaning process, including the clean water (to be checked by the Engineer with a portable HNU), methanol, and mobile hot water high pressure washer. All waste generated from this entire washing process should be collected and sealed in 55-gallon drums.

D. WORKMANSHIP

Drilling operators have converted 275 gallon heating fuel storage tanks into wash water tubs by cutting the tanks in half, cleaning them and placing them on their sides in trailers. A portable gasoline-driven power generator is used to power a portable hot water generator. Wash water or methanol from the cleaning process is drained out the lower end of the tub, through a gate valve/rubber hose into 55 gallon drum. These drums can be easily replaced as they fill up with contaminated wash water. Drums will be sealed to a leak-free condition by the Contractor when they are full. The tub itself must be cleaned and decontaminated between each washing/rinsing cycle. All spent washwater and methanol must be disposed of in a manner acceptable to the Engineer.

After cleaning, the drilling equipment is placed on a clear surface on the driller's truck bed or wrapped in polyurethane sheeting.

Equipment and procedures of this kind, or as approved by the Engineer, may be used by the Contractor.

E. PAYMENT

Payment for cleaning of equipment will be made at the unit price per borehole as stated in the Contractor's Proposal for CLEANING OF EQUIPMENT. Payment at this unit price shall constitute full compensation for all work, materials, and equipment specified in this Section.

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CFP015

02589 CAPPING AND CLOSURE

The Contractor will provide all materials and equipment, and perform all necessary work, to cap and close each well as shown in Drawings Nos. 3 and 4.

A length of steel casing with a locking cap must be securely set in a concrete pad around each well. Locks for the locking caps will be provided by the Engineer.

Payment for all work, materials, and equipment will be at the unit price per well as stated in the Contractor's Proposal for STEEL CASING, LOCKING CAP, and CONCRETE PAD.

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CFP016

02590 STANDBY TIME AND DOWNTIME

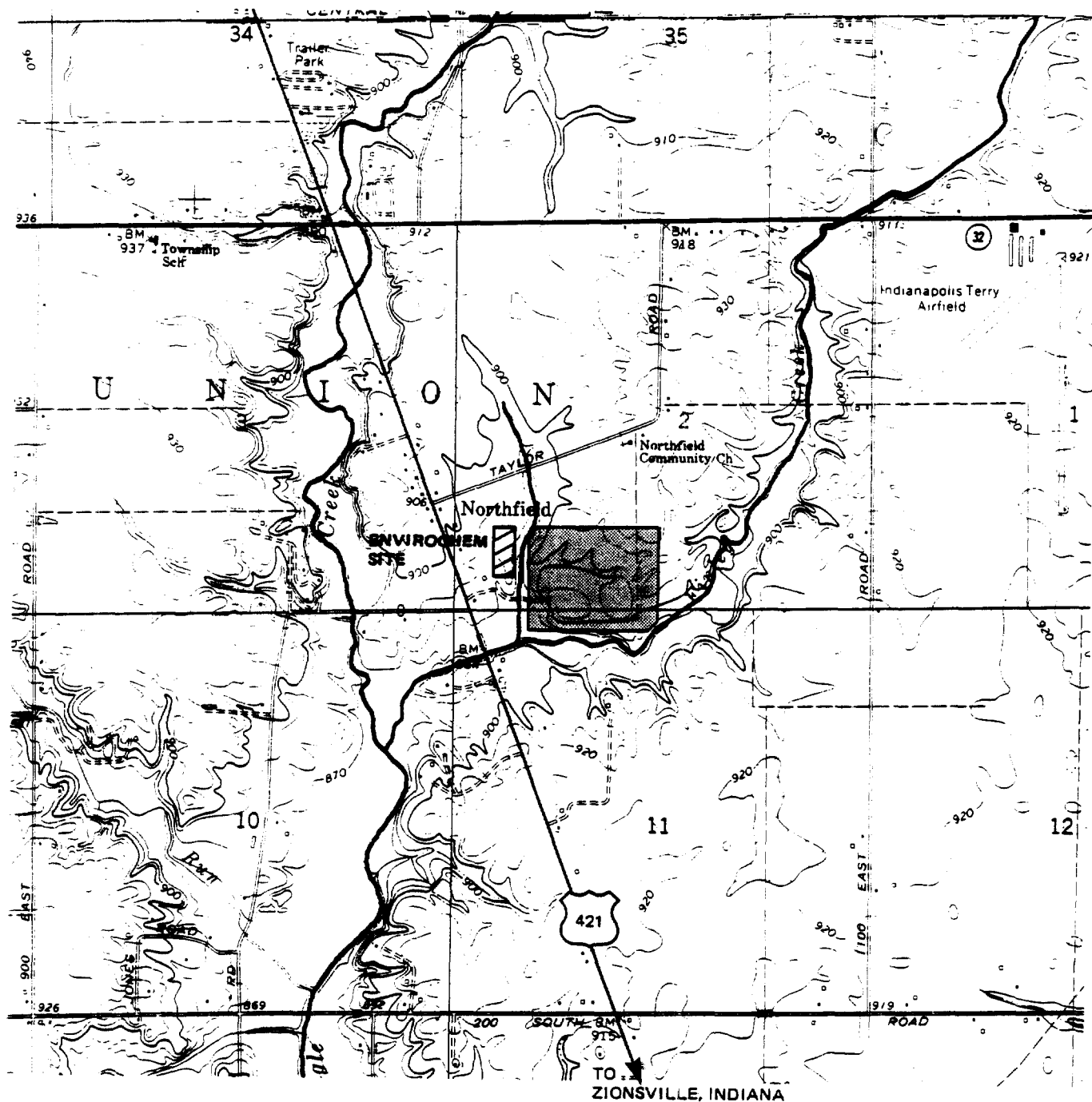
Standby time shall be paid shutdown time for drilling rig and crew for any portion of a normal work day when the Engineer orders work to cease.

Downtime shall mean that time other than standby time during which drilling could occur but does not. All downtime shall be at the sole expense of the Contractor.



Payment for standby time shall be at the unit price per hour as stated in the Contractor's Proposal for STANDBY TIME.

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PART 4
DRAWINGS



LEGEND

-  NORTHSIDE LANDFILL
-  SITE



SCALE IN FEET

DRAWING NO. 1
VICINITY MAP
ECC SITE

U.S. 421

LANDFILL
ENTRANCE

DRAINAGE DITCH

SOLIDIFICATION
PIT

DIKE

MAIN
GATE

OFFICE

COOLING
WATER
POND

PROCESS
BUILDING

PROCESS
DRAINAGE
SUMP





NORTHSIDE
SANITARY
LANDFILL

CONCRETE
STORAGE
PAD

DIKE

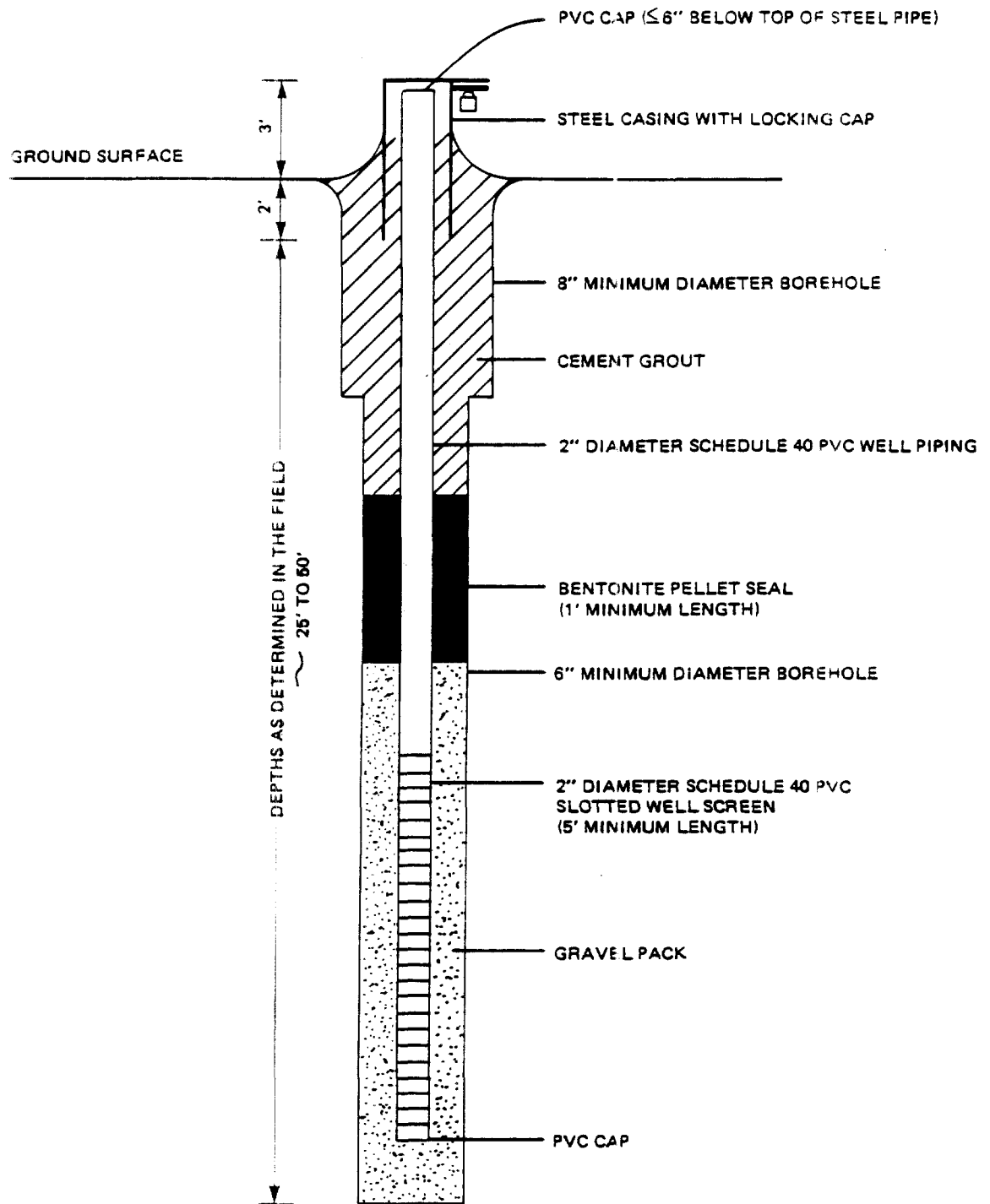
UNNAMED
DITCH

LEGEND

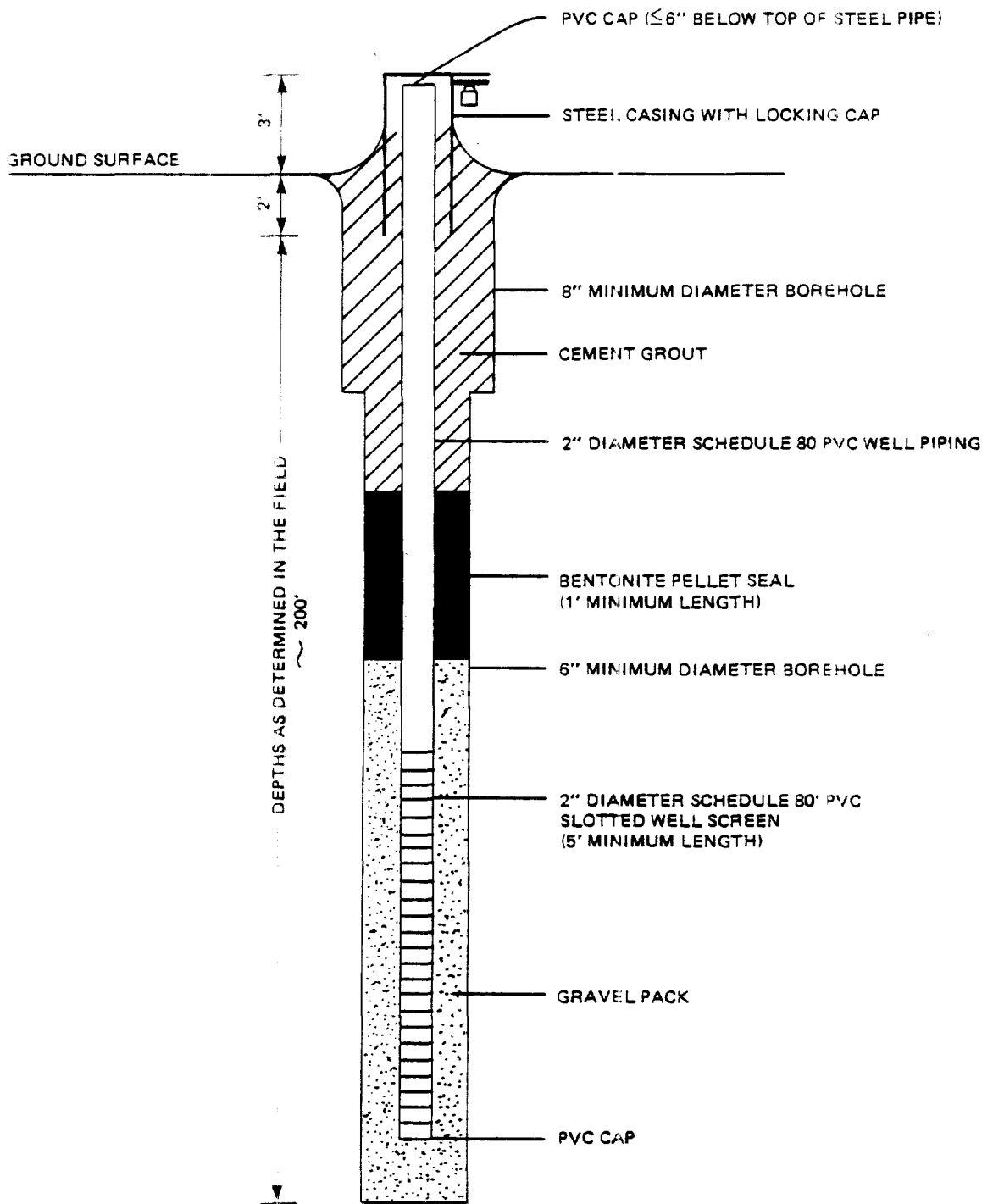
-  DRUM STORAGE AREA
-  TANKS
-  WOOD FENCE
-  STRANDED WIRE FENCE



SCALE IN FEET



DRAWING NO. 3
SHALLOW AND INTERMEDIATE
MONITORING WELL CONSTRUCTION
ECC SITE



DRAWING NO. 4
DEEP MONITORING WELL
CONSTRUCTION
ECC SITE

Exhibit A
Personal Protection Equipment

LEVEL D

1. Cotton coveralls
2. Cotton underwear
3. Safety boots/shoes
4. Safety glasses
5. Hard hat with optional face shield
6. Ultra-twin cartridge respirator (readily available)
7. Robertshaw escape mask (readily available)
8. Work gloves

LEVEL C

1. MSA Ultra-Twin cartridge respirator
2. Robertshaw escape mask
3. Butyl rubber apron, ankle length with sleeves
4. Butyl rubber gloves
5. Surgical gloves
6. Neoprene boots with steel toe and shank
7. Butyl rubber booties
8. Chemical-resistant coveralls
9. Cotton underwear
10. Disposable booties* (additional pair)
11. Disposable gloves* (additional pair)
12. Hard hat with face shield*

*Optional

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